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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,168	03/31/2004	Michael M. Albert	1857.2390000/MVM/CMB	4453

26111 7590 03/20/2007
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WASHINGTON, DC 20005

EXAMINER

CONSILVIO, MARK J

ART UNIT	PAPER NUMBER
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2872

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/813,168	Applicant(s) ALBERT ET AL.	
	Examiner Mark Consilvio	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-23,26 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-23,26 and 28-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 18-23, 26, and 28-32 were previously rejected and claim 18 is newly amended.

Claims 18-23, 26, and 28-32 are currently pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18-23, and 28-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites the negative limitation, “the parallel wire elements of each group are non-interlaced” in order to exclude the characteristics of the prior art product. There is nothing inherently ambiguous or uncertain about a negative limitation so long as the boundaries of the patent protection sought are set forth definitely. See MPEP § 2173.05(i). However, a negative limitation, may, under certain circumstances, be indefinite or too broad if the alternatives to are many and not all are acceptable alternatives. See *In re Bankowski*, 138 USPQ 75 (C.C.P.A. 1963). Since the term interlaced has multiple definitions, it is not clear which, if not all, possible definitions are excluded by the term non-interlaced.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18, 22, 23, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Flagello et al. (US Patent No. 6,943,941).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

With respect to claims 18, Flagello discloses an lithography apparatus (1) comprising: (a) a source (LA) producing a light beam having at least one wavelength within the UV spectrum; (b) a mask (MA); (b) a substrate (24) transparent to light in the UV spectrum and disposed in a path of the light beam; and (d) an array of wire elements (22) on the substrate; wherein the array of wire elements are divided into wedge-shaped groups having parallel wire elements therein to polarize incident UV light and output light that is tangentially polarized about an axis at a center of the polarizer, wherein adjacent wedge-shaped groups are arranged around the axis and wherein the parallel wire elements of each group are non-interlaced (figs.1-3).

With respect to claim 22, Flagello discloses the substrate includes fused silica, calcium fluoride, sapphire, quartz, or magnesium fluoride (col. 10, lines 55-67).

With respect to claim 23, Flagello discloses the UV light comprises at least two polarizations and wherein the elements generally reflect most incident light of a first polarization direction and transmit most of the light of a second polarization direction (col. 10, lines 45-54).

With respect to claim 31, Flagello discloses the elements may include aluminum, silver or gold (col. 10, lines 55-67).

With respect to claim 32, Flagello discloses the incident UV light is substantially unpolarized since the light source of Schuster produces unpolarized light (col. 10, lines 45-54).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-23, 26, and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuster (US Patent Application Publication No. 2002/0176166) in view of Hansen et al. (US Patent Application Publication No. 2002/0167727) and in further view of Niz'yev (Russian Patent Publication No. 2,166,819)

With respect to claims 18 and 26, Schuster discloses an lithography apparatus comprising: (a) a source (51) producing a light beam having at least one wavelength within the UV spectrum; (b) a mask (57); (b) a substrate (63) transparent to light in the UV spectrum and

disposed in a path of the light beam; and (d) an array of polarizing elements composing the substrate; wherein the array of elements are arranged in a pattern around the optical axis of the polarizer and divided into groups of elements to polarize incident UV light and output a tangentially polarized light, with respect to the cylindrical symmetry of the polarizer, toward the mask. Schuster does not expressly disclose an array of wire elements on the substrate; wherein the array of elements are divided into wedge-shaped groups having parallel wire elements therein to polarize incident UV light and output light that is tangentially polarized, with respect to the cylindrical symmetry of the polarizer wherein adjacent wedge-shaped groups are separated by a boundary extending from a perimeter of the polarizer to a center of the polarizer or that the array of elements are patterned on the substrate to produce radially polarized light.

However, Hansen teaches that birefringent crystal prism polarizers like that of Schuster are expensive and have a number of undesirable qualities for many exacting optical systems. Also, Hansen teaches that wire grid polarizers can cure many of these deficiencies by providing polarizing system that is thinner and causes less attenuation, that is less expensive, that has broader angular acceptance, and that is more efficient. Further, Hansen discloses that a plurality of parallel wire elements may be arranged to produce the desired polarization orientation and therefore provides the additional advantage of being integrated into a single element that can utilize unpolarized light. Though Hansen does not teach that wire grid polarizers are known to be use in conjunction with ultraviolet light, it is well known in the art that the spacing between the wire elements can be adjusted to adequately polarize particular wavelength regions. Hansen also does not specifically teach the array of wire elements are divided into wedge-shaped groups

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having parallel wire elements therein to output light that is tangentially polarized or the array of wire elements produce radially polarized light.

However, Niz'yev discloses a wire grid polarizer that outputs tangentially polarized light with respect to the cylindrical symmetry of the polarizer wherein a array of wire elements are divided into wedge-shaped groups having parallel wire elements therein and wherein adjacent wedge-shaped groups are separated by a boundary extending from a perimeter of the polarizer to a center of the polarizer (fig. 3) and discloses a wire grid polarizer that outputs radially polarized light (fig. 4).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Schuster and Hansen to replace the birefringent array and polarizer of Schuster with a wire grid polarizer like that of Niz'yev arranged to provide tangentially or radially polarized light to obtain the benefits of a wire grid polarizer as taught by Hansen and Niz'yev.

With respect to claims 19-21 and 28-30, the combination as set forth supra does not expressly disclose the pitch, period, or thickness of the elements. However, it is well known in the art that only certain parameters pertaining to the wire grid polarizer will effectively polarize ultraviolet light. For example, one of ordinary skill would understand that a pitch of about one quarter of a wavelength of the UV light is desirable so that higher orders of diffraction are not created by the wire grid polarizer. Likewise, a period of between about 45 nm and 95 nm and a thickness of between approximately 0.04 and 0.3 μm would be required for system making use of ultraviolet light around 193nm. Therefore, at the time the invention was made, it would have

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been obvious to a person of ordinary skill in the art to provide the required features for use in the lithographic system as taught by Shuster.

With respect to claim 22, Schuster discloses the birefringent array includes fused silica, calcium fluoride, sapphire, quartz, or magnesium fluoride (par. 22). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use such a material for the wire grid substrate since it is well known that these materials are transparent in the ultraviolet region of light.

With respect to claim 23, the combination as taught above discloses the UV light comprises at least two polarizations and wherein the elements generally reflect most incident light of a first polarization direction and transmit most of the light of a second polarization direction.

With respect to claim 31, as noted above though Shuster is silent to wire elements, Hansen discloses the elements may include aluminum, silver or gold. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use such a material for the wire grid substrate since it is well known that these materials are effective polarizing elements, are readily available, and can be apply according to a variety of methods to produce such small elements.

With respect to claim 32, the combination discloses the incident UV light is substantially unpolarized since the light source of Schuster produces unpolarized light.

Response to Arguments

Applicant's arguments, see p. 6, filed 12/14/2006, with respect to claim 26 have been fully considered and are persuasive. The rejection over US 6,943,941 of claim 26 has been withdrawn.

Applicant's additional arguments filed 12/14/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the Flagello reference fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the parallel wire elements of each group are non-interlaced) have been given their broadest reasonable interpretation. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Though Flagello describes the grid elements in the embodiment shown Fig. 2B as interlaced, the elements are shown to be interlaced at most in so much as they are staggered or varied by alternation. However, one of ordinary skill could clearly construe the elements to be non-interlaced in so much as they are not interwoven.

In response to applicant's argument that Niz'yev is nonanalogous art, the examiner recognizes that it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. The examiner disagrees that Niz'yev is not reasonably pertinent to the particular problem with which the applicant was concerned. Niz'yev teaches the technical achievement of the invention is the creation of an optical element with high selectivity to radiation with

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tangential or radial polarization and assurance of high reflecting capability and element radiating stability (abstract). Hence, the particular problem concerns, not only generally polarizing light from an unpolarized source and controlling the direction of polarization across the vector field, but specifically, designing a wire grid element to shape the polarization radially or tangentially.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

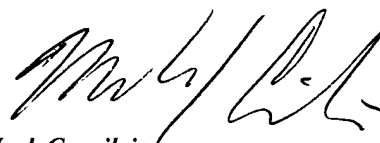
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Consilvio whose telephone number is (571) 272-2453. The examiner can normally be reached on Monday thru Thursday, 8:30 am to 6:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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